cantilever member (22) to generate heat. The heat provided by the resistor ***separates*** cantilever member (22) from substrate (21) (see column 3, lines 13-31). In the pressure sensor embodiment shown in Figures 5 and 6 of Fushinobu, a substrate (41) has a diaphragm (42) formed thereon, with a space (43) therebetween. Heating elements (46) prevent diaphragm (42) from becoming stuck to substrate (41) by stiction. It can be seen that the primary object of Fushinobu is to ***eliminate*** stiction (see column 1, lines 35-37 and 55-57).

In contrast to Fushinobu's device, the present invention ***requires*** stiction between a member and a substrate. For example, Claim 1 recites "a member adherent by stiction to a surface of a substrate". The operation of present invention is believed to be based upon the principle that the thermal conduction between a member and a substrate to which the member is stictionally adhered is dependent upon the pressure of the air or other gas present in the very small gaps between the member and the substrate. A heater is provided to heat the member and a temperature sensor is provided to measure a temperature of the member. It is submitted that this arrangement is patentably different from any pressure sensors in the prior art.

The Examiner has suggested that the cantilever member (22) of Fushinobu is equivalent to "a member adherent by stiction to a surface of a substrate", as claimed in claim 1. While Fushinobu's cantilever member (22) is sometimes adherent by stiction to a substrate, Fushinobu fails to teach or suggest the other features of the claims of this application. As discussed above, the primary object of Fushinobu is to prevent the cantilever member (22) from adhering to the surface of the substrate (21). To accomplish this object, Fushinobu provides a heating element (23) which, when activated, heats the ***substrate*** (21) in order to eliminate stiction between the cantilever member (22) and the substrate (21). Fushinobu neither discloses nor suggests means for heating cantilever member (22), or for monitoring the temperature of cantilever member(22). There would be no reason to monitor a temperature of Fushinobu's cantilever member (22). Fushinobu fails to disclose a pressure sensor as claimed herein.

Smith discloses a pressure sensor built on a silicon chip (13). A cavity (14) in the chip is covered by a polysilicon diaphragm (15). The cavity is evacuated. A piezoresistive element (41) contacts the diaphragm. Pressure acting on the diaphragm causes the diaphragm to deflect and this causes piezoresistive element (41) to yield a pressure-varying signal that may be detected. A temperature sensitive resistor (42) may be located "in the vicinity of the pressure sensor" (see the abstract), but there is no functional integration of

the temperature sensitive resistor (42) and the pressure sensor. Smith's sensor has a completely different principle of operation from the pressure sensor of this invention. Bond pads (19) are provided on the chip for use in attaching cabling to the chip. Smith does not disclose or suggest that the bond pads are adherent by stiction to the surface of the chip. Furthermore, Smith does not disclose any means for heating the bond pads, nor any means for monitoring the temperature of the bond pads.

Claims 1-20 and 30-40

None of the prior art cited by the Examiner teaches or even suggests a pressure sensor with a member adherent by stiction to a surface of a substrate having "means for heating the member and means for monitoring a temperature of the member", as claimed in claim 1, or "a heater located to heat the member and a temperature sensor located to generate a signal responsive to a temperature of the member", as claimed in claim 30. Even if one were motivated to attempt to combine the teachings of Fushinobu and Smith, one would not have the claimed invention since there is no suggestion in either cited reference of a pressure sensor which operates according to the same principles as the pressure sensor of the claimed invention or which has the features of the claimed invention. Accordingly, it is submitted that claims 1 and 30, and claims 2-20 and 31-40 which depend therefrom, respectively, are patentable over all of the prior art cited by the Examiner.

Claims 21 and 41-43

None of the prior art cited by the Examiner discloses a pressure sensor having an electrically conductive member in physical contact with a surface of a substrate wherein at least one of the electrically conductive member and the substrate "has a surface roughness in the range of nanometers to tens of nanometers", as claimed in claims 21 and 41. The Examiner has stated that "it is common to have come degree of roughness due to the etching technique. Hence, a matter of experimental choice as to the exact degree of roughness." However, surfaces having a roughness in the claimed range of nanometers to tens of nanometers are particularly advantageous, as described on page 8, lines 10-28 of the specification. Furthermore, the operation of the pressure sensors in the cited references would not be expected to be affected by surface roughness. Therefore, a routineer in the art would not be expected to identify the claimed surface roughness as being advantageous.

Accordingly, it is submitted that providing a pressure sensor as claimed in claims 21 and 41 with at least one surface with a roughness in the claimed range of nanometers to tens of

Accordingly, it is submitted that providing a pressure sensor as claimed in claims 21 and 41 with at least one surface with a roughness in the claimed range of nanometers to tens of nanometers is not merely a matter of experimental choice and is patentable over the prior art of record.

The Applicant requests reconsideration of this application in light of the foregoing discussion.

Accordingly, it is submitted that claims 1-21 and 30-43 are in condition for allowance, which is respectfully requested. The Examiner is invited to contact the undersigned by telephone at (604) 669-3432 to discuss any outstanding issues.

Respectfully submitted,
OYEN WIGGS GREEN & MUTALA

By:

Gavin N. Manning
Registration No. 36,412
tel: 604.669.3432 ext. 224
fax: 604.681.4081

Vancouver, B.C.
CANADA
Encl.

FAX RECEIVED

FEB 0 4 2003

TECHNOLOGY CENTER 2800